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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/961,294	09/25/2001	Jin-young Lee	1568.1024	6532

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EXAMINER

WEINER, LAURA S

ART UNIT PAPER NUMBER

1745

DATE MAILED: 02/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/961,294

Applicant(s)

LEE, JIN-YOUNG

Examiner

Laura S Weiner

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-17 and 19-30 is/are pending in the application.
- 4a) Of the above claim(s) 20-24 and 26-30 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-17,19 and 25 is/are allowed.
- 6) ☒ Claim(s) 1-7,9 and 10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1-3, 5-7, 9-10 are rejected under 35 U.S.C. 102(b)/(e) as being anticipated by Wen et al. [(6,077,897) or (6,159,639)].

Wen et al. teaches in column 1, lines 5-8 and column 2, lines 21-54, a composite electrolyte consisting of a waterborne polyurethane (WPU), a polyethylene oxide (PEO) and liquid electrolytes. Wen et al. teaches providing a polyurethane material (polymerizing a dried hydroxyl group containing component and an isocyanate group (-NCO) containing component to form a prepolymer of polyurethane as a matrix material; dispersing the matrix material in a first solvent and mixing PEO in the same solvent to form a dispersion solution; drying the dispersion to form a thin composite film of WPU-PEO as a matrix of the polymeric electrolyte and then adding a component of an anhydrous liquid electrolyte into the matrix to form the WPU-PEO based composite electrolyte. Wen et al. teaches in column 5, Examples 3-5 that 1 M of LiCF<sub>3</sub>SO<sub>3</sub>/PC, LiClO<sub>4</sub>/PC or LiPF<sub>6</sub>/PC/DEC was used based on the composite electrolyte. Wen et al. teaches in column 6, claim 5, that the isocyanate group can be toluene diisocyanate, isophorone diisocyanate, etc. and teaches in claim 8 that the hydroxyl group can be polyethylene glycol, polypropylene glycol, etc. Wen et al. teaches in column 3, line 65 to column 4, line 5, polymerizing the polydiol compound and the diisocyanate compound at a temperature between 60-100 degrees C.

Wen et al. ('639) teaches in column 4, claim 1, a triple-polymer composite electrolyte comprising a thin composite film of a triple-polymer mixture serving as a matrix which comprises a waterborne polyurethane containing polyethylene glycol, a waterborne polyurethane containing polytetramethylene glycol and polyethylene oxide. Wen et al. ('639) teaches in column 3, Example 2, that the composite film contained 1M LiCF<sub>3</sub>SO<sub>3</sub>/PC.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wen et al. [(6,077,897) or (6,159,639)] in view of Schlueter, Jr. et al. (5,985,419).

Wen et al. teaches the claimed polymeric electrolyte as explained above but does not specify the crosslinking agent.

Schlueter, Jr. et al. teaches in column 7, lines 46-54, that urethanes are typically formed by the reaction of a polyisocyanate and a compound containing hydroxyl groups and a curing or crosslinking agent is usually added. Schlueter, Jr. et al. teaches in column 8, lines 45-67, that chain extenders such as bifunctional or trifunctional extenders which act as crosslinking agents are used. Examples of trifunctional chain extenders include glycerol, etc. which crosslink the polymer chains at 90 degrees and yield very set resistant networks.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a glycerol crosslinking agent because Schlueter, Jr. et al. teaches that they help to yield very set resistant networks.

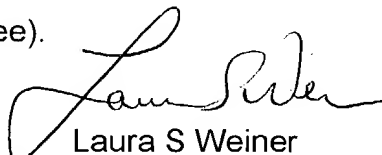
***Allowable Subject Matter***

6. Claims 11-17, 19, 25 are allowed over the prior art of record because no prior art was found teaching the specified crosslinked polyether urethane polymeric electrolyte contained in a lithium battery having in addition a separator having a network structure and made of an insulating resin.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura S Weiner whose telephone number is 571-272-1294. The examiner can normally be reached on M-F (6:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Laura S Weiner  
Primary Examiner  
Art Unit 1745

February 18, 2004